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## Sulfacetamide Sodium Ophthalmic Solution

### DEFINITION

Sulfacetamide Sodium Ophthalmic Solution is a sterile solution containing NLT 90.0% and NMT 110.0% of the labeled amount of sulfacetamide sodium ( $C_8H_9N_2NaO_3S \cdot H_2O$ ). It may contain suitable buffers, stabilizers, and antimicrobial agents.

### IDENTIFICATION

#### • A.

**Sample:** Nominally 1 g of sulfacetamide sodium from a volume of Ophthalmic Solution

**Analysis:** Dilute the *Sample* with water to 25 mL, adjust with 6 N acetic acid to a pH of 4–5, and filter. Wash the precipitate with water, and dry at 105° for 2 h. Use the precipitate in *Identification* tests B and C.

**Acceptance criteria:** The sulfacetamide melts at 180°–184°.

#### • B.

**Sample:** 500 mg of the sulfacetamide from *Identification* test A

**Analysis:** Place the *Sample* in a test tube, and heat gently until it boils.

**Acceptance criteria:** An oily liquid, which has the characteristic odor of acetamide, condenses on the walls of the test tube (distinction from the sublimates of sulfadiazine, sulfamerazine, and sulfamethazine, which are solids at room temperature).

#### • C.

**Sample solution:** 500 mg of *Identification* test A in 10 mL of dilute hydrochloric acid (1 in 10)

**Analysis 1:** To about one-half of the *Sample solution* add 2 mL of trinitrophenol TS.

**Acceptance criteria 1:** A very heavy flocculent or almost gelatinous precipitate is formed.

**Analysis 2:** To the remainder of the *Sample solution* add 3 drops of formaldehyde TS.

**Acceptance criteria 2:** A white precipitate is formed, and it changes to orange on standing (distinction from sulfamethoxypyridazine).

### ASSAY

#### • PROCEDURE

**Diluent:** 20% methanol

**Mobile phase:** Methanol, glacial acetic acid, and water (10:1:89)

**Standard stock solution:** 5 mg/mL of [USP Sulfacetamide Sodium RS](#) prepared as follows. Transfer 50 mg of [USP Sulfacetamide Sodium RS](#) to a 40-mL centrifuge tube. Add 10.0 mL of *Diluent*, insert the stopper, and mix using a vortex mixer for 3 min to dissolve the Reference Standard.

Add 7.5 mL of heptane, insert the stopper, and mix using a vortex mixer for another 3 min. Centrifuge to effect separation of the phases. Withdraw, and discard the upper heptane layer.

**Standard solution:** 0.03 mg/mL of [USP Sulfacetamide Sodium RS](#) in *Diluent* from the *Standard stock solution*

**System suitability solution:** 0.03 mg/mL of sulfanilamide in the *Standard solution*

**Sample stock solution:** Nominally 1 mg/mL of sulfacetamide sodium prepared as follows. Transfer 100 mg of sulfacetamide from a volume of Ophthalmic Solution, freshly mixed and free of air bubbles, to a 100-mL volumetric flask, and dilute with *Diluent* to volume.

**Sample solution:** 0.03 mg/mL of sulfacetamide sodium from Ophthalmic Solution in *Diluent* from the *Sample stock solution*

#### Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

**Mode:** LC

**Detector:** UV 254 nm

**Column:** 4.6-mm × 25-cm; packing L1

**Flow rate:** 1.5 mL/min

**Injection volume:** 90  $\mu$ L

#### System suitability

**Samples:** *Standard solution* and *System suitability solution*

#### Suitability requirements

**Resolution:** NLT 3 between the sulfacetamide and sulfanilamide peaks, *System suitability solution***Column efficiency:** NLT 1500 theoretical plates, determined from the analyte peak, *Standard solution***Relative standard deviation:** NMT 2.0%, *Standard solution***Analysis****Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of sulfacetamide sodium ( $C_8H_9N_2NaO_3S \cdot H_2O$ ) in the portion of Ophthalmic Solution taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (M_{r1}/M_{r2}) \times 100$$

$r_U$  = peak response from the *Sample solution*

$r_S$  = peak response from the *Standard solution*

$C_S$  = concentration of [USP Sulfacetamide Sodium RS](#), calculated on the anhydrous basis, in the *Standard solution* (mg/mL)

$C_U$  = nominal concentration of sulfacetamide sodium in the *Sample solution* (mg/mL)

$M_{r1}$  = molecular weight of sulfacetamide sodium monohydrate, 254.24

$M_{r2}$  = molecular weight of anhydrous sulfacetamide sodium, 236.23

**Acceptance criteria:** 90.0%–110.0%**SPECIFIC TESTS**

- [STERILITY TESTS \(71\)](#): Meets the requirements

**ADDITIONAL REQUIREMENTS**

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers, in a cool place.

- [USP REFERENCE STANDARDS \(11\)](#).

[USP Sulfacetamide Sodium RS](#)

**Auxiliary Information** - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
SULFACETAMIDE SODIUM OPHTHALMIC SOLUTION	<a href="#">Documentary Standards Support</a>	SM12020 Small Molecules 1
REFERENCE STANDARD SUPPORT	RS Technical Services <a href="mailto:RSTECH@usp.org">RSTECH@usp.org</a>	SM12020 Small Molecules 1

**Chromatographic Database Information:** [Chromatographic Database](#)

**Most Recently Appeared In:**

Pharmacopeial Forum: Volume No. Information currently unavailable

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